

CLAIMS:

- 1 1. A method of scanning an artifact comprising:
2 obtaining color image data for the artifact using conventional imagery;
3 obtaining gross shape data for the artifact using a three-dimensional scanning
4 technique;
5 determining areas on the artifact that need to be scanned in a higher
6 resolution; and
7 obtaining high resolution shape data for the areas on the artifact determined
8 to need higher resolution using an amplitude modulated laser scanning technique.
- 1 2. The method of claim 1 further comprising combining the color image data, gross
2 shape data, and high resolution shape data into a single image file representative of
3 the artifact.
- 1 3. The method of claim 1 wherein obtaining gross shape data for the artifact using
2 a three-dimensional scanning technique is achieved using a photometric stereo
3 scanning technique.
- 1 4. The method of claim 1 wherein obtaining gross shape data for the artifact using
2 a three-dimensional scanning technique is achieved using a structured light
3 scanning technique.
- 1 5. The method of claim 1 wherein obtaining high resolution shape data for the
2 artifact using amplitude modulated laser scanning technique is achieved by a
3 galvanometer based system.
- 1 6. The method of claim 1 wherein obtaining high resolution shape data for the
2 artifact using amplitude modulated laser scanning technique is achieved by an
3 acousto-optic Bragg cell system.

- 1 7. A system for scanning an artifact comprising:
2 a software controlled processor for operating the scanning system;
3 a CCD coupled with the processor for obtaining color image data; gross
4 shape data; and high resolution shape data for the artifact;
5 at least one color illumination projector coupled with the processor for
6 illuminating the artifact with colored light;
7 at least one pattern illumination projector coupled with the processor for
8 illuminating the artifact with light for obtaining gross shape data for the artifact using
9 a three-dimensional scanning technique;
10 an amplitude modulated laser scanning device coupled with the processor for
11 obtaining high resolution shape data for the areas on the artifact determined to need
12 higher resolution; and
13 optical lenses for focusing a range scanning beam emitted from the amplitude
14 modulated laser scanning device onto the artifact.
- 1 8. The system of claim 7 wherein the processor combines the color image data,
2 gross shape data, and high resolution shape data into a single image file
3 representative of the artifact.
- 1 9. The system of claim 7 wherein the gross shape data for the artifact is obtained
2 using a photometric stereo three-dimensional scanning technique.
- 1 10. The system of claim 7 wherein the gross shape data for the artifact is obtained
2 using a structured light three-dimensional scanning technique.
- 1 11. The system of claim 7 wherein the high resolution shape data for the artifact is
2 obtained using a galvanometer based amplitude modulated laser scanning technique.
- 1 12. The system of claim 7 wherein the high resolution shape data for the artifact is
2 obtained using an acousto-optic Bragg cell amplitude modulated laser scanning
3 technique.

- 1 13. A system for scanning an artifact comprising:
2 means for obtaining color image data for the artifact using conventional
3 imagery;
4 means for obtaining gross shape data for the artifact using a three-
5 dimensional scanning technique;
6 means for determining areas on the artifact that need to be scanned in a
7 higher resolution; and
8 means for obtaining high resolution shape data for the areas on the artifact
9 determined to need higher resolution using an amplitude modulated laser scanning
10 technique.
- 1 14. The system of claim 13 further comprising means for combining the color image
2 data, gross shape data, and high resolution shape data into a single image file
3 representative of the artifact.
- 1 15. The system of claim 13 wherein the means for obtaining gross shape data for
2 the artifact using a three-dimensional scanning technique is achieved using a
3 photometric stereo scanning technique.
- 1 16. The system of claim 13 wherein the means for obtaining gross shape data for
2 the artifact using a three-dimensional scanning technique is achieved using a
3 structured light scanning technique.
- 1 17. The system of claim 13 wherein the means for obtaining high resolution shape
2 data for the artifact using amplitude modulated laser scanning technique is achieved
3 by a galvanometer based system.
- 1 18. The system of claim 13 wherein the means for obtaining high resolution shape
2 data for the artifact using amplitude modulated laser scanning technique is achieved
3 by an acousto-optic Bragg cell system.